

Regenerate PACT® System Carbon, Eliminate Sludge Cost Effectively

Operators of PACT® systems can regenerate powdered activated carbon and dispose of biological sludge simultaneously with wet air regeneration technology. It's a double savings.

The Zimpro® wet air regeneration (WAR) system from Siemens Water Technologies operates at moderate temperatures so the spent carbon surfaces are regenerated but not damaged. And the system regenerates the carbon as a slurry, so no expensive, labor intensive dewatering steps are required. Carbon recovery rates of 90 percent or more are common.

At the same time, the process oxidizes the organic sludge associated with the spent carbon, reducing the sludge to a small amount of sterile ash. You don't have to deal with the expense and liability of disposing of the sludge. Further, WAR systems are readily permitted even in non-attainment areas of the United States. WAR systems emit no oxides of sulfur or nitrogen, and no particulates.

WAR systems are ideal for PACT® systems where virgin carbon rates exceed 2,000 pounds per day. The systems can be field-erected units, capable of handling large volumes, or shop-fabricated, skid-mounted units designed for flows as low as 2 gallons per minute.

Features of Wet Air Regeneration Systems

- Low temperature operation
- Slurry process
- Autothermal (self-sustaining)
- Skid-mounted units for small flows
- Fully enclosed



Benefits of Wet Air Regeneration Systems

- Energy efficient autothermal operation
- Low energy consumption
- Low operating cost
- No dewatering required
- No SO_x, NO_x or particulate emissions
- No sludge for disposal
- 90%+ carbon recovery
- Small footprint
- Applicable to large, small flows
- Any separated ash is stable, non-leaching

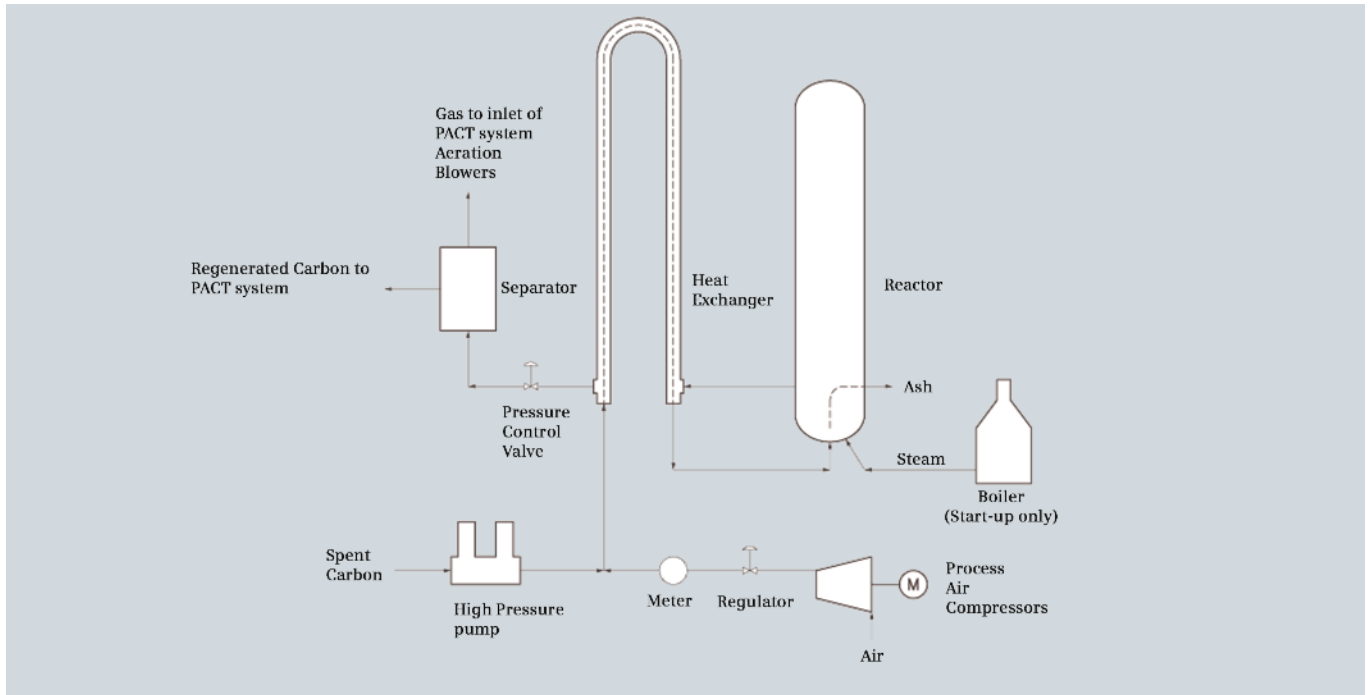
The WAR Process

Following treatment in a PACT® system, the wasted spent carbon is gravity thickened, mixed with compressed air, and pumped into the WAR system heat exchangers. The air-slurry mixture passes into the regeneration reactor.

Here, an exothermic reaction takes place, releasing heat when the organics are oxidized. Organics are oxidized and carbon surfaces are renewed. Heat is recovered as the oxidized slurry passes back through the heat exchangers, warming the incoming slurry.

The regenerated carbon slurry is then returned to the PACT® system. Organics are reduced to carbon dioxide, water, and a small amount of low molecular weight organics, mainly acetic acid. Any ash associated with the spent carbon can be wasted out of the system, and disposed.

The WAR process is typically designed to be self-sustaining (requiring no auxiliary fuel) at a feed solids concentration of six to seven percent.



Proven Performance

WAR systems are operating successfully at many municipal and industrial facilities throughout North America and overseas:

- Rodeo, CA - 15 gpm skid-mounted system; petroleum refinery wastewaters; startup 1989
- Medina County, OH - 55 gpm system; municipal advanced treatment; startup 1980; expansion, year 2000
- Repsol Quimica, Spain - high strength petrochemical wastewater, custom designed 105 gpm WAR, startup 2001
- Ta Sheh Industrial Zone, Taiwan, ROC - Custom-designed system; blended industrial wastes; startup 1996
- Vernon, CT - 50 gpm system; municipal and textile dye wastewaters; startup 1979; expansion in 1998
- BPCL Refinery, India - 25 gpm system; refinery wastewater; startup 1989; expansion in 2004
- Burlington, NC - 86 gpm system; combined industrial-municipal wastewater; startup 1980; expansion in 1999

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